NYD 986524812

DRAFT
from 6/29/83 USGS
Niagara Frontier Study

93. NASH ROAD #932054

Location and General Information

The Nash Road site is located in the City of North Tonawanda and is shown on plate 4.

The site was used as a disposal site for an unknown quantity of caustics, plating tank sludge and municipal waste. The site was used by the Niagara Falls Air Force Base, Bell Aerospace, Carborundum, Frontier Chemical, Graphite Specialties, Continental Can, and Grief Brothers. The site was active from 1964-68.

Geologic Information

The geology of the site consists of a Holocene lacustrine clay unit overlying a bedrock of Camillus Shale. Four test borings were drilled on the site and their locations are shown in figure 1. The geologic description of the borings is as follows:

Well No.	Depth (ft)	Description
1	0 - 5.0	Fill.
	5.0 - 6.5	Clay, pink.
		WATER SAMPLE: 6.0 ft.
2	0 - 8.0	Clay, tan to light green, sandy, dry.
	8.0 - 10.0	Clay, green.
	10.0 - 11.5	Clay, pink.
		SOIL SAMPLE: 8 - 10 ft.
3	0 - 1.5	Tan and black fill.
	1.5 - 3.5	Clay, greenish, sandy, dry.
	3.5 - 7.0	Clay, greenish, sandy, wet.
		SOIL SAMPLE: 7 ft.
4	0 - 1.0	Topsoil.
	1.0 - 3.5	Clay, sandy, dry.
	3.5 - 6.5	Clay, greenish, wet.
		SOIL SAMPLE: 6.5 ft.

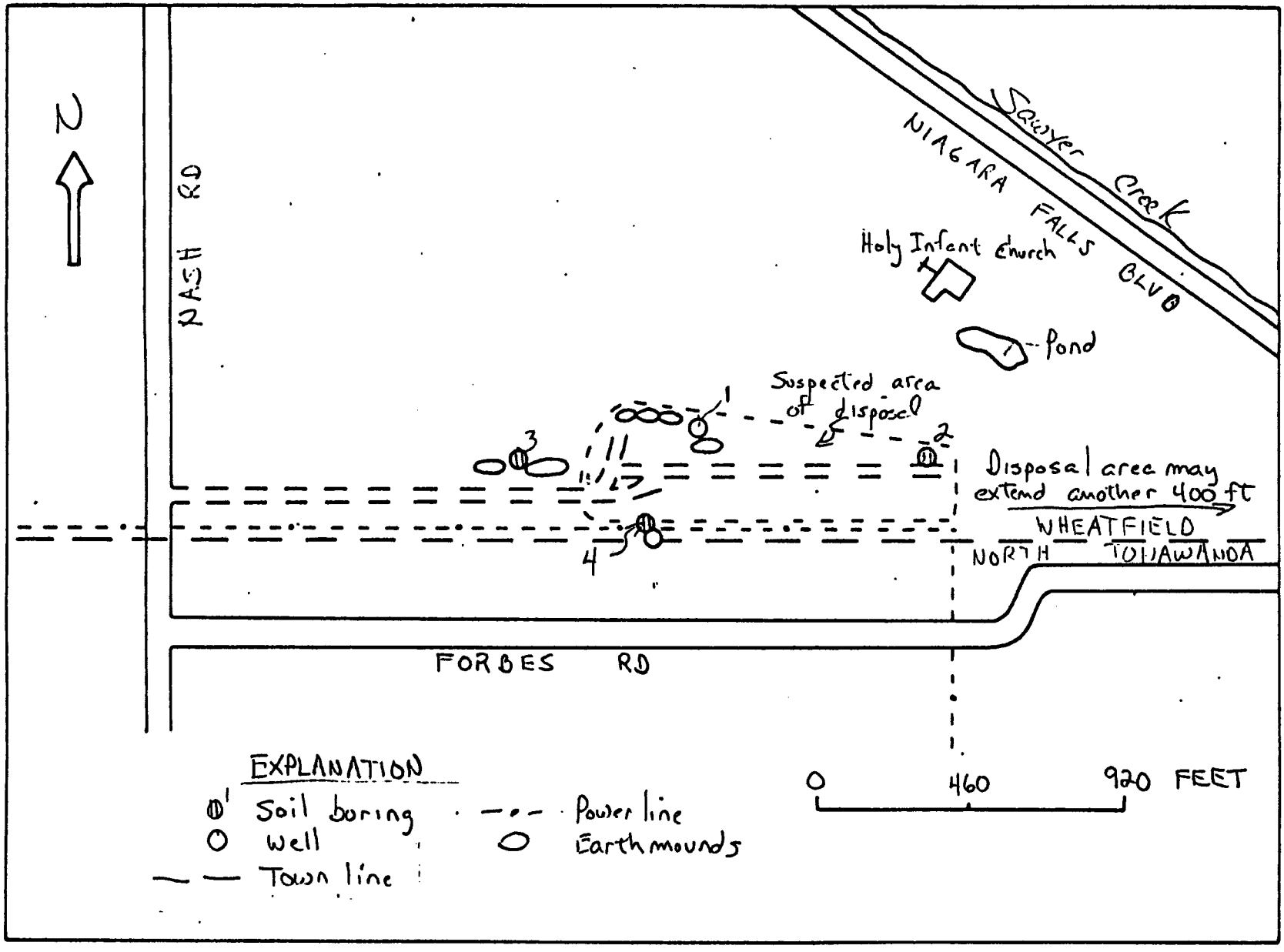

Figure 1. Location of sampling sites on the Nash Road property.

Hydrologic Information

Ground water was encountered approximately 6 ft below land surface. The water table is estimated to have an elevation between 570 and 575 ft above sea level. The direction of ground-water flow appears to be toward Sawyer Creek. Additional wells are needed to confirm this.

Chemical Information

One water sample and three soil samples were collected as indicated in the geologic descriptions of the test borings. Each sample was analyzed for arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel and organic compounds using a GC/MS acid-base neutral scan. The results are shown in table 1.

Electromagnetic Survey

An electromagnetic survey was conducted over the site in November 1982. Eight survey lines were conducted and their locations are shown in figure 2.

The southern portions of lines 1 through 8 all show the interference effects of a string of high power electrical transmission lines. Because of these power lines (and a housing development south of them) it was impossible to place the southern end of each line in a disposal-free area.

Lines 1, 2, and 3 are all similar in that they show an irregular pattern of conductivity values within the disturbed area. Once the trees which form the northern border of the landfill are reached the three lines show conductivity values within the background conductivity range.

Table 1 .—Analyses of ground-water and substrate samples from Nash Road, Wheatfield, New York

	Sample number			
	1	2	3	4
Date collected	062482	062482	062482	062482
Depth (ft)	6.0	9.5	7.0	6.5
Sample Type[1]	gw	s	s	s
pH	6.4	-	-	-
Conductivity (uMHOS)	2650	-	-	-
Temperature (°C)	17.0	-	-	-
Inorganic Constituents[2]				
Antimony				
Arsenic	5;5	<1000;<1000	<1000	<1000
Cadmium	1;1	1000;1000	1000	1000
Chromium	<10;<10	2000;4000	2000	2000
Copper	17;21	77000;100000	71000	71000
Iron	90000;90000	2500000;5000000	2100000	2400000
Lead	67;74	20000;20000	13000	20000
Mercury	0.3;0.5	<10;<10	<10	<10
Nickel	34;34	<10000;<10000	<10000	<10000
Selenium				
Zinc				
Flouride				
Sulfide				
Cyanide				
Organic Compounds[2]				
1,2,3-trimethylbenzene[5]	6.2;-[7]	-;-	<300	-
1,2,4-trimethylbenzene[5]	18;-[7]	-;-	<300	-
1,4-dichlorobenzene[5]	7.3;-[7]	-;-	<300	-
(1-methylethyl)benzene[5]	9.3;-[7]	-;-	<300	-
1,3,3-Trimethyl-bicyclo-[2.2.1]heptan-2-one[4]	62;-[7]	-;-	<300	-
1,7,7-Trimethyl-bicyclo-[2.2.1]heptan-2-one[4]	390;17[7]	-;-	<300	-

[1] Sample type: gw=ground water, sw=surface water, and s=substrate.
[2] Concentrations: ug/L for water and ug/Kg for substrate. Blank spaces indicate that no analyses were performed; dashes indicate that constituents and compounds were not found.
[3] Cu(D): analysis done by direct aspiration because of high iron concentration.
[4] Identity determined by library match; no standard available. Concentration results are semiquantitative and are based on the response factor of the internal standard.
[5] Identity based on less than library match; identification seemed reasonable. As for footnote 4, concentration results are semiquantitative.
[6] Volatile found in GC/ms extractions. Concentration results probably less than actual.
[7] Low surrogate recoveries.
[8] Estimated value less than detection limit.

Table 1.—Analyses of ground-water and substrate samples from Nash Road, Wheatfield, New York—continued

	Sample Number			
	1.	2	3	4
Organic Compounds[2] (continued)				
1,7,7-Trimethyl-bicyclo-[2.2.1]heptane-2.5-dione[5]	<5;20[7]	-;-	-	-
3-(1,1-dimethylethyl) phenol[5]	20;2.0[8]	-;-	-	-
2-methylbenzochloride[5]	<5;-[7]	-;-	-	-
Diethylphthalate[5]	6.2;8.0[7]	-;-	-	-
Phosphoric acid, tributylester[5]	10;110[7]	-;-	-	-
2(3H)-benzothiazolone[5]	<5;60[7]	-;-	-	-
Di-n-butylphthalate	2.5[8];5.7[7]	-;-	-	-
1,2,3,4,4a,9,10,10a-octahydro-1,4a-dimethyl-7-(1-methyethyl)-[1R-(1 alpha, 4a beta, 10a alpha)]-1-phenanthrenecarboxaldehyde[5]	<5;1.5[8]	-;-	-	-
Cyclohexlphthalate[5]	2.6[8];-[7]	-;-	-	-
3,5-Dimethyl phenol[5]	-;11[7]	-;-	-	-
2-ethyl-4-phenol-.delta. 2-1,3,4-oxadiazolin-5-one[5]	-;100[7]	-;-	-	-
n-butylbenzene sulfonamide[5]	-;9.9[7]	-;-	-	-
3-(2-phenylethyl)phenol[5]	-;2.1[8]	-;-	-	-
2H-1-benzopyran[5]	-;<5[7]	-;-	-	-
2-methylpentadecane[5]	-;<5[7]	-;-	-	-
Heptadecane[5]	-;<5[7]	-;-	-	-
Octacosane[5]	-;<5[7]	-;-	-	-
4,8,12-Trimethyl-3,7,11-tridecatriene-nitrile,4[5]	-;<5[7]	-;-	-	-
Nonadecane[5]	-;<5[7]	-;-	-	-
3,8-Dimethylundecane[5]	-;<5[7]	-;-	-	-
o-methyloxime-3,5-dimethyl-2-cyclohexen-1-one[5]	-;-	804;-	-	-

1 Sample type: gw=ground water, sw=surface water, and s=substrate.
2 Concentrations: ug/L for water and ug/Kg for substrate. Blank spaces indicate that no analyses were performed; dashes indicate that constituents and compounds were not found.
3 Cu(D): analysis done by direct aspiration because of high iron concentration.
4 Identity determined by library match; no standard available. Concentration results are semiquantitative and are based on the response factor of the internal standard.
5 Identity based on less than library match; identification seemed reasonable. As for footnote 4, concentration results are semiquantitative.
6 Volatile found in GC/ms extractions. Concentration results probably less than actual.
7 Low surrogate recoveries.
8 Estimated value less than detection limit.

Table 1 .—Analyses of ground-water and substrate samples from Nash Road, Wheatfield, New York

	Sample Number			
	1	2	3	4
Organic Compounds[2] (continued)				
Iodocyclohexane [5]	-;-	10052;-	-	-
N-[2-methyl-1-(1-methylethyl) butylidiene]methanamine[5]	-;-	36569;-	-	-
N-(2 hydroethyl)-dodecanamide [5]	-;-	16342;-	-	-
1-(2-butenyl)-2,3-dimethylbenzene [5]	-;-	1301;-	-	-
2,3,5,6,7,8,9,10-octahydri-5-hydroxy-2,2,7,7,9-pentamethyl-5,9-menthano-benzocycloocten-4(1H)-one[4]	-;-	6294;-	-	-
10-methylcisosane [4]	-;-	<300;-	-	-
Hexamethylcyclotrisiloxane[5]	-;-	-;-	-	1300
Octamethylcyclotetra-siloxane [5]	-;-	-;-	-	5440
Decamethylcyclopenta-siloxane [5]	-;-	-;-	-	293[8]
Dodecamethylcyclohexa-siloxane [5]	-;-	-;-	-	90.7
5-Methyl-3-hexen-2-one[5]	-;-	-;3500	-	-
Dichloromethylbenzene[5]	-;-	-;<300	-	-
2-(1,1-Dimethyl)-4-methylfuran[5]	-;-	-;183000	-	-
2,4-Dimethyl-2-pentene		-;182000	-	-
3-Octanol[5]		-;47500	-	-
2,6-Bis(1,1-dimethylethyl) napthalene[5]	-;-	-;1650	-	-
1,1,4,5,5,8-Hexamethyl-S-hydrindacene[5]	-;-	-;5750	-	-
Flouranthene	-;-	-;538	-	-
Benz(a)anthracene	-;-	-;272[8]	-	-
Chrysene	-;-	-;274[8]	-	-
Benzo(b)flouranthene	-;-	-;223[8]	-	-
Benzo(k)flouranthene	-;-	-;249[8]	-	-
2,6-Dimethyl-2,5-hepta-dien-4-one[5]	-;-	-;-	509	-
2-Methyl-2-octen-4-one[5]	-;-	-;-	13300	-
1,2,4-Trimethyl-5-(1-methyl-ethenyl)benzene[5]	-;-	-;-	159	-

[1] Sample type: gw=ground water, sw=surface water, and s=substrate.
[2] Concentrations: ug/L for water and ug/Kg for substrate. Blank spaces indicate that no analyses were performed; dashes indicate that constituents and compounds were not found.
[3] Cu(D): analysis done by direct aspiration because of high iron concentration.
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[6] Volatile found in GC/ms extractions. Concentration results probably less than actual.
[7] Low surrogate recoveries.
[8] Estimated value less than detection limit.

Lines 4, 5, and 6, though longer than the first three lines, show a similar conductivity pattern. Lines 4, 5, and 6 contain areas where values of zero conductivity were recorded. These areas probably correspond to the intersection of the traverse line with a zone of buried metallic debris. As shown in figure 3, when readings are taken over a buried pipe (or other metal conductor) the value of apparent conductivity read by the EM31 first rises, then drops to zero.

Line 7 both began and ended in a zone of obvious dumping. Data collection beyond 340 ft was impeded by a small pond.

Line 8 showed the clearest sample of the interference affects of the power lines to the south. The regular background conductivity range values seen throughout the line are artificially elevated when recorded within 40 ft of the power lines.

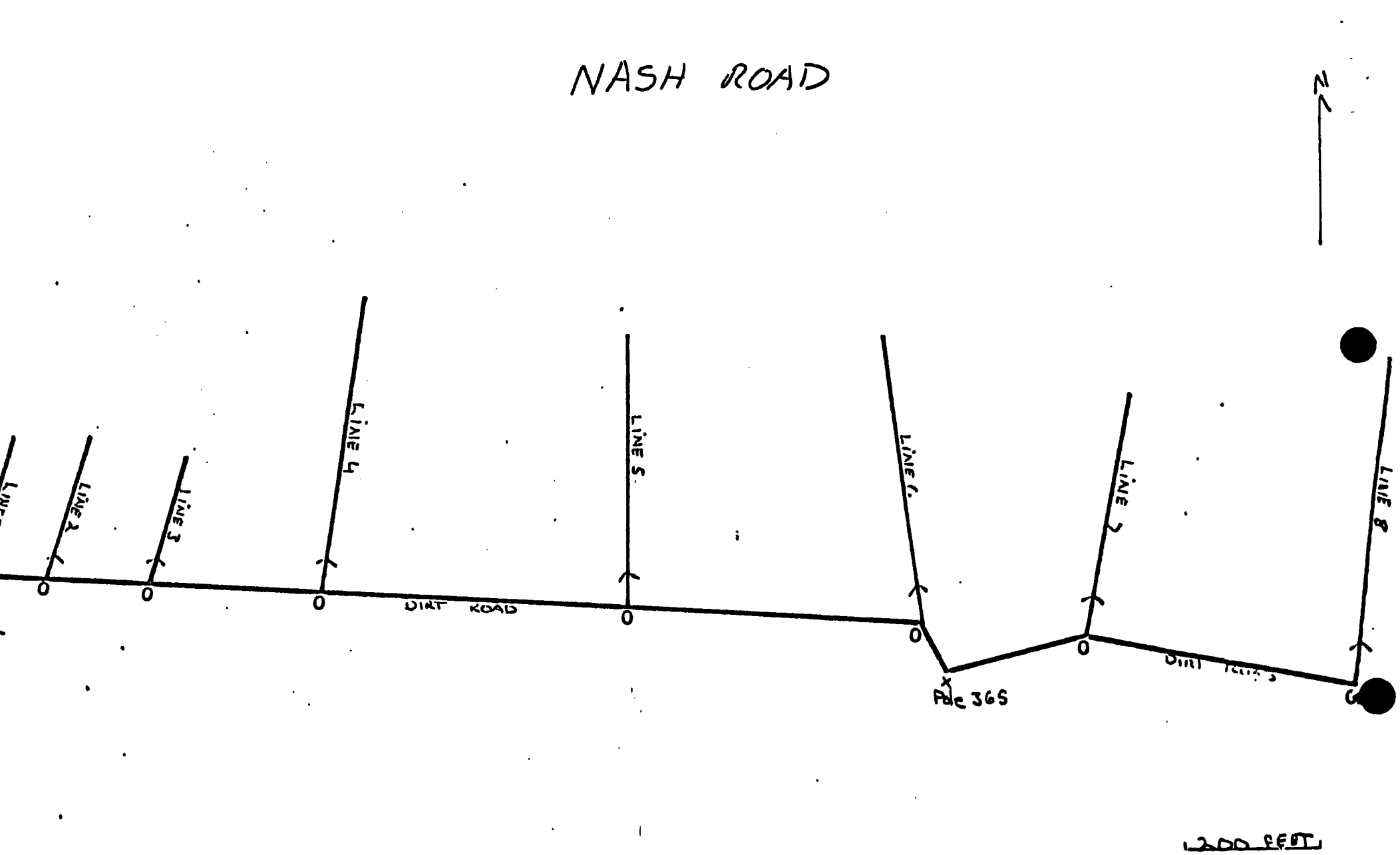


Figure 2. Location of electromagnetic survey lines on the Nash Road property.

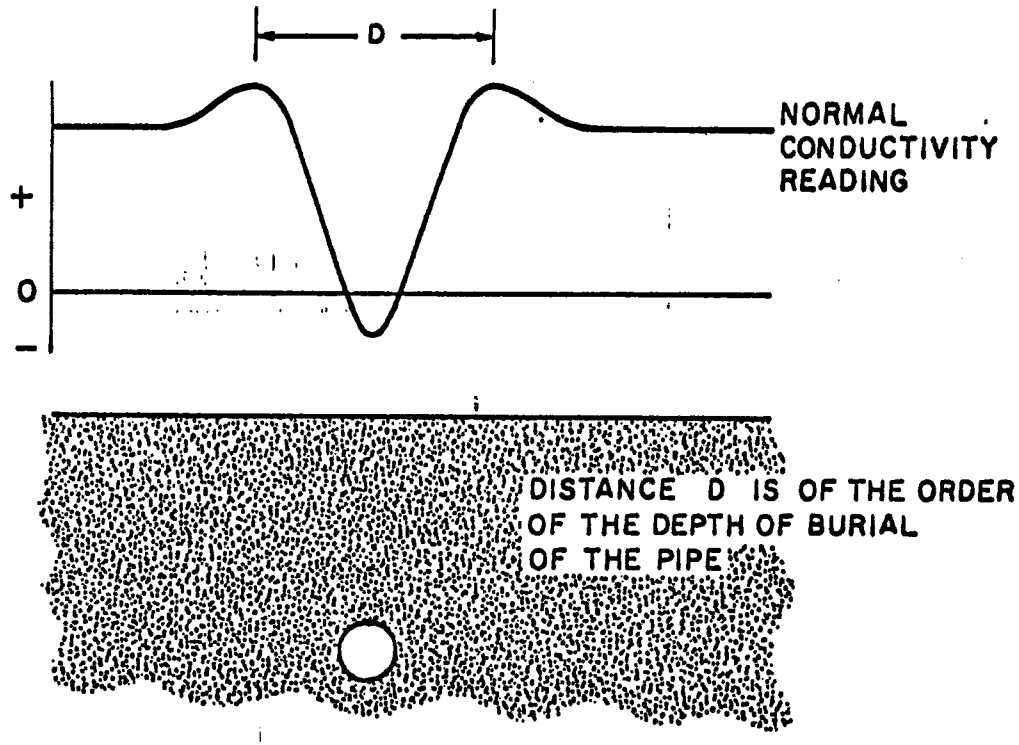
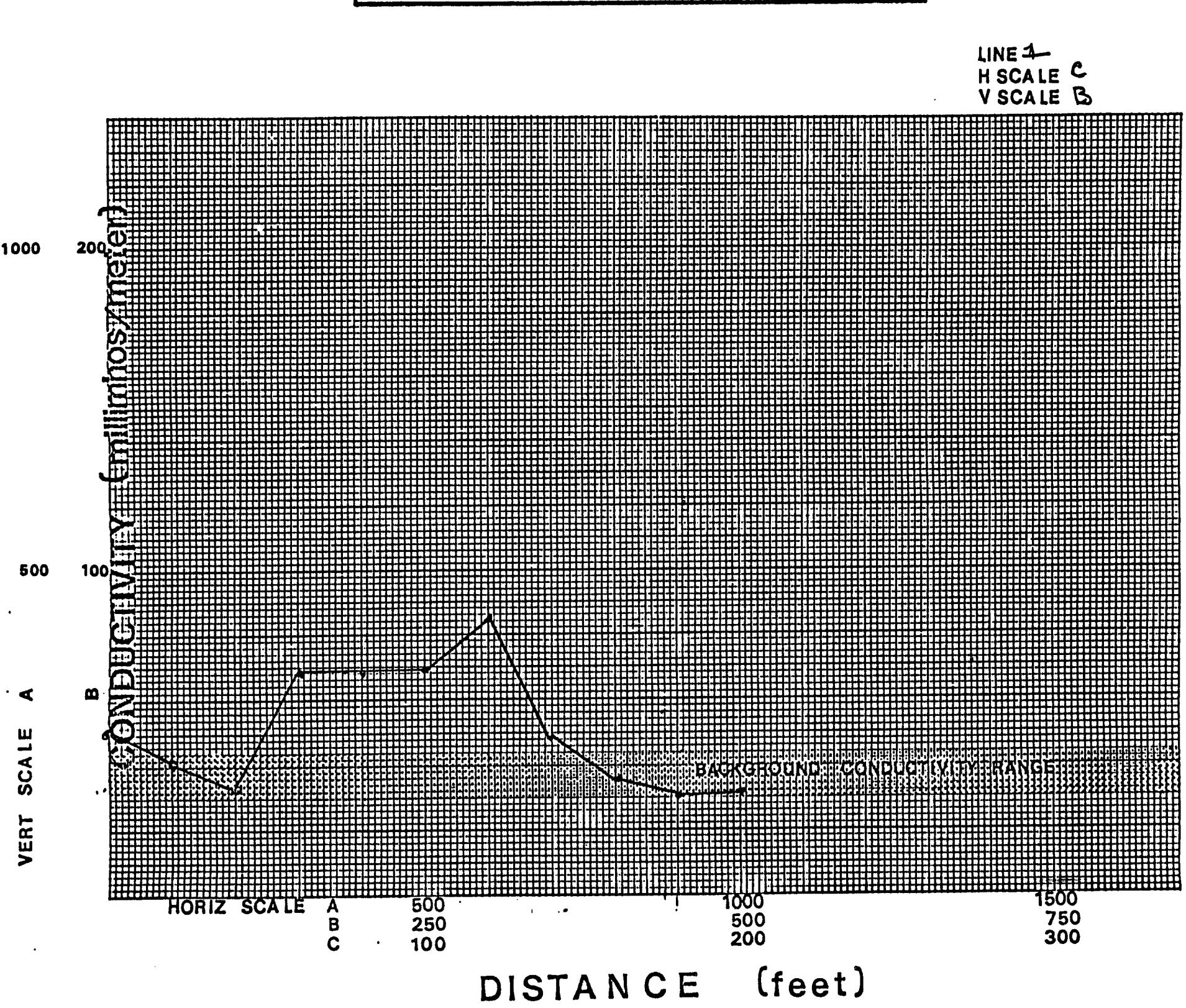
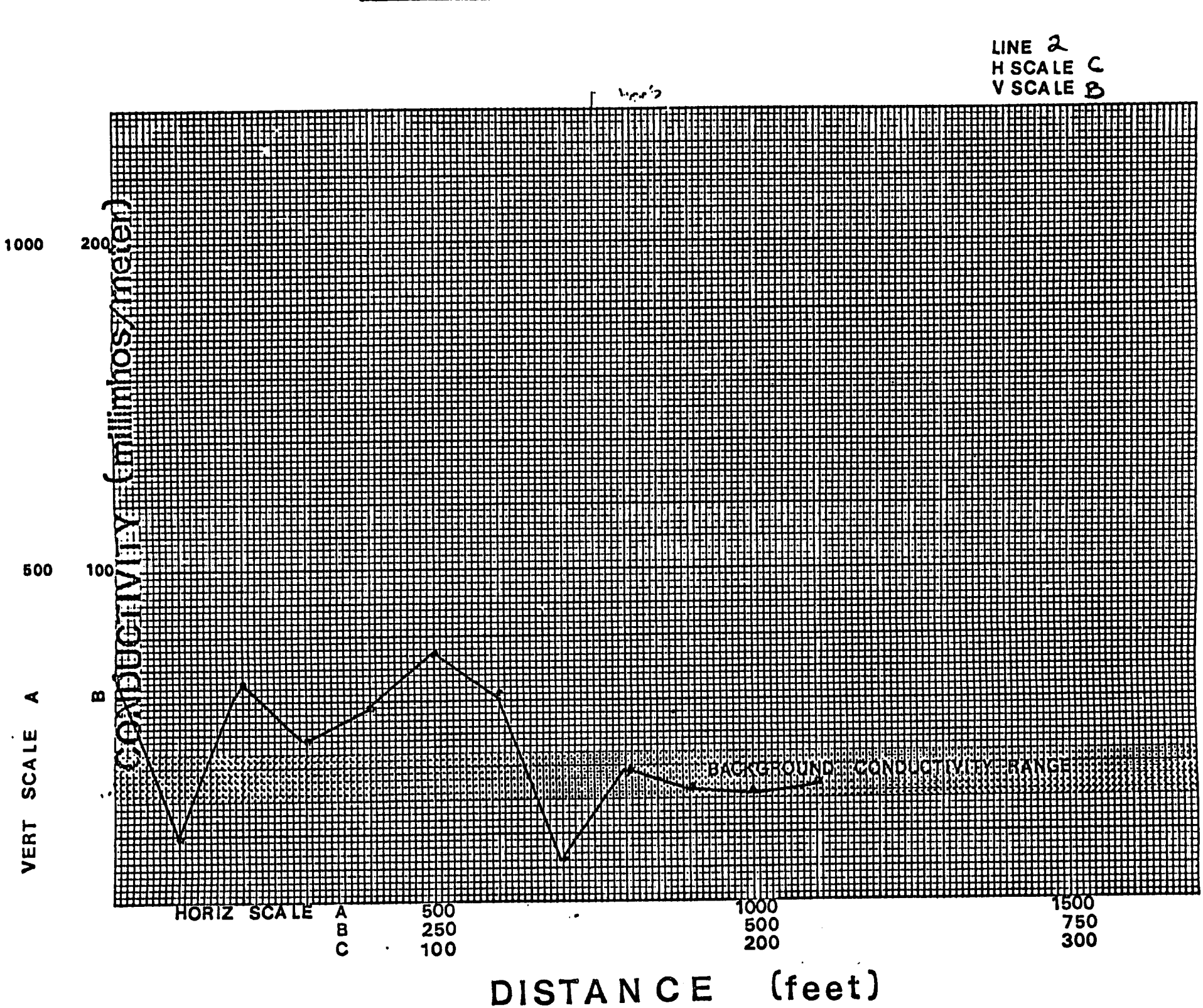
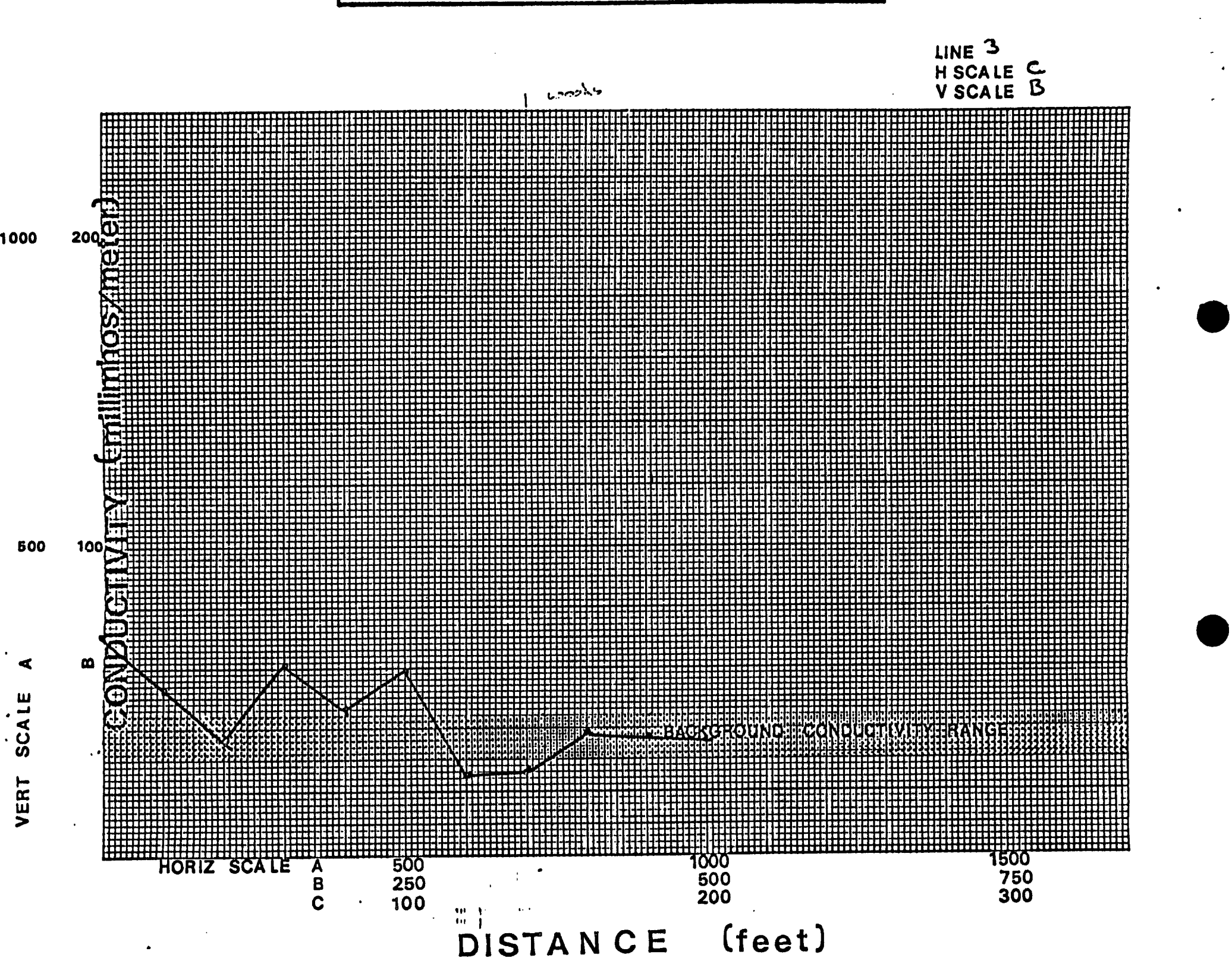
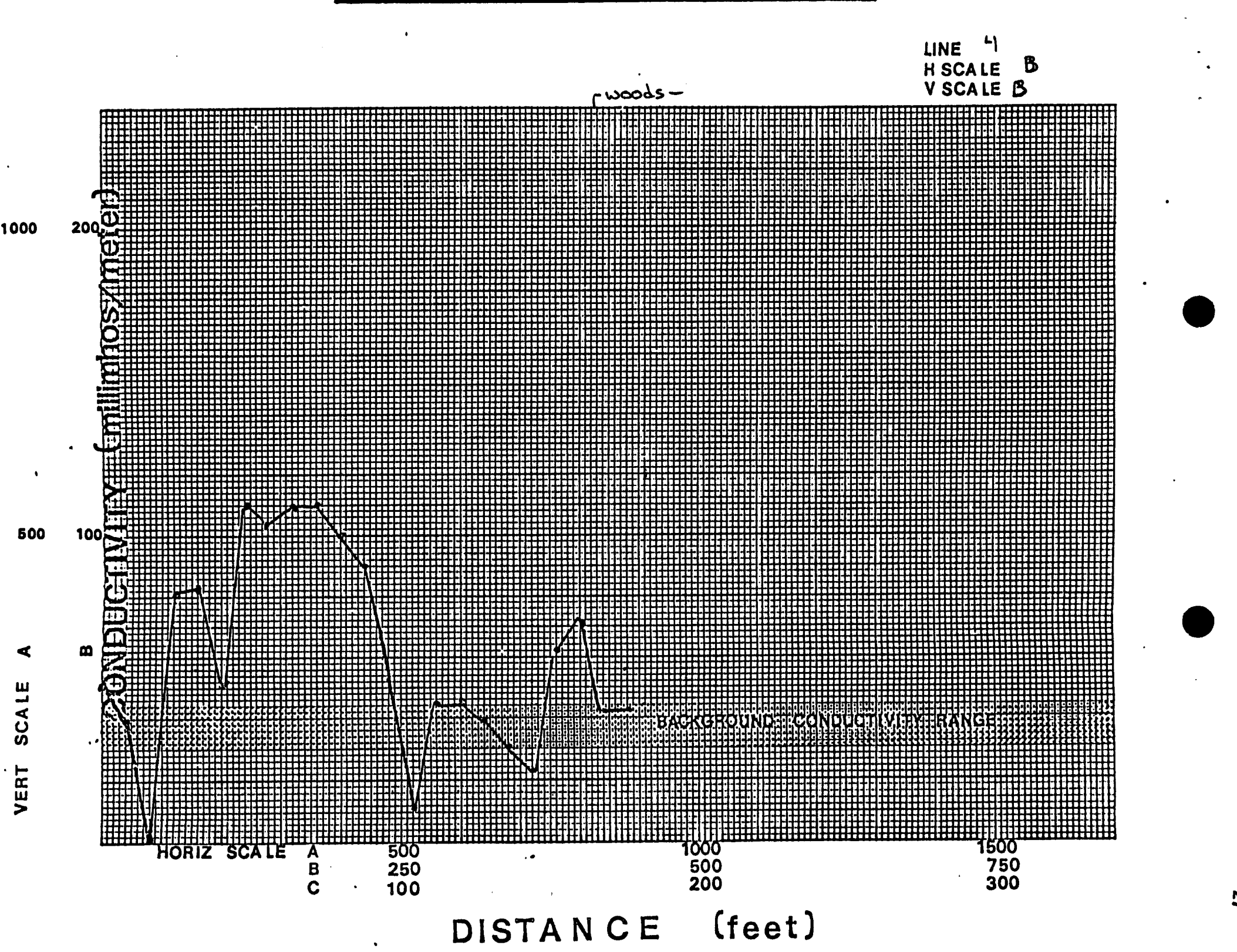


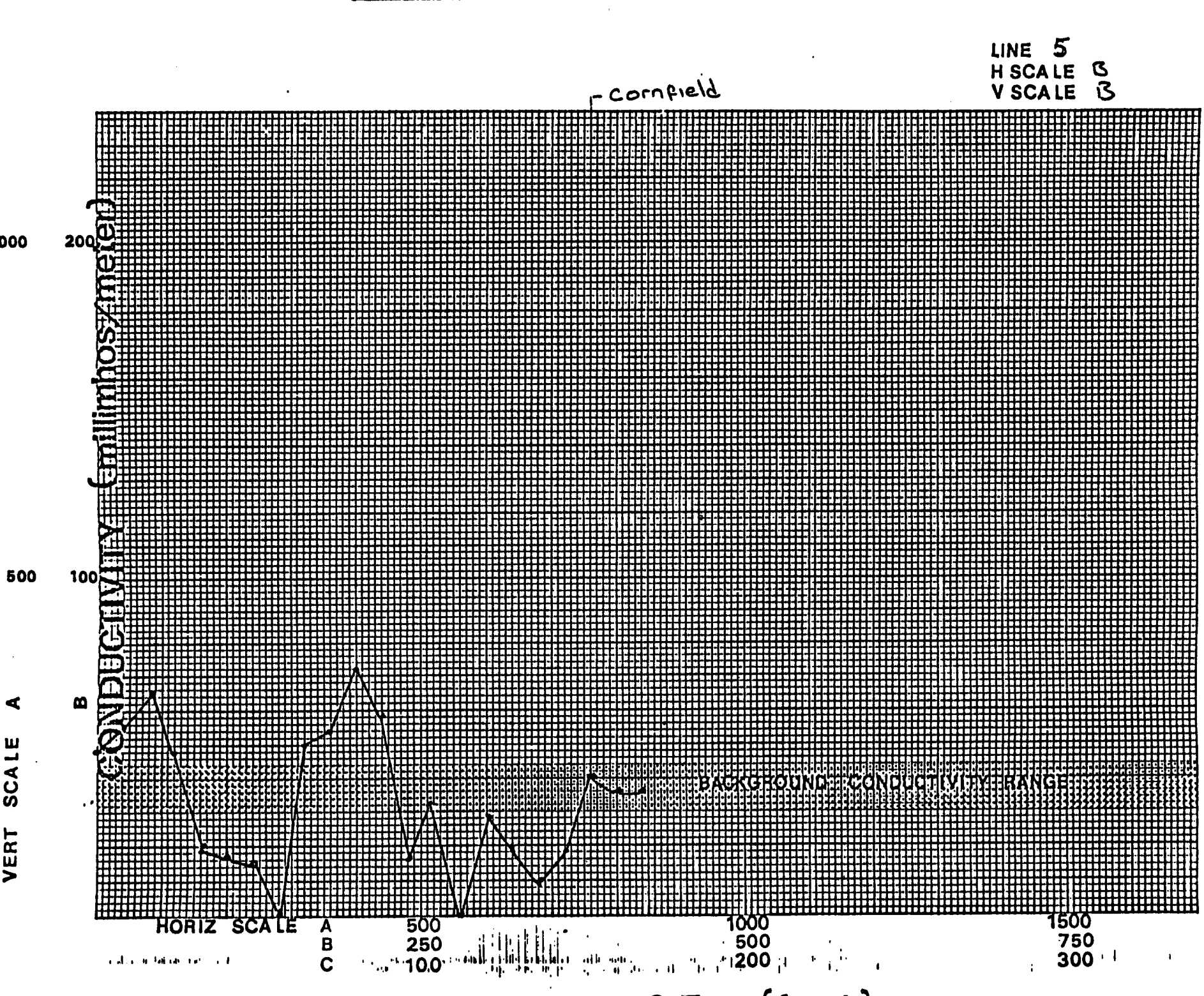
Fig. 3 TYPICAL RESPONSE OVER A PIPE

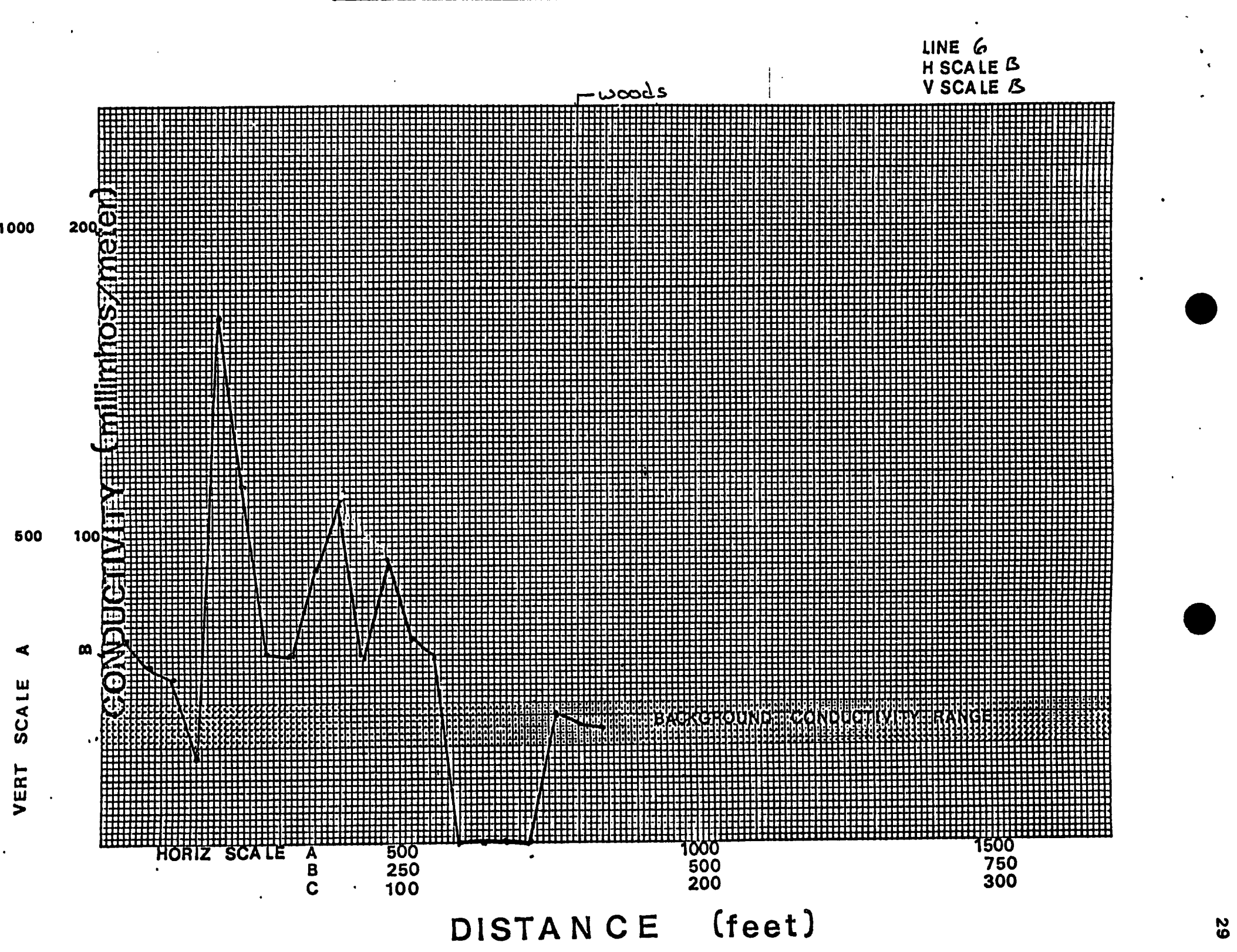

LINE 1
H SCALE C
V SCALE B
CONDUCTIVITY (millimhos/meter)
1000
200
500
100
VERT SCALE A
B
BACKGROUND CONDUCTIVITY RANGE
HORIZ SCALE A 500 1000 1500
B 250 500 750
C 100 200 300
DISTANCE (feet)

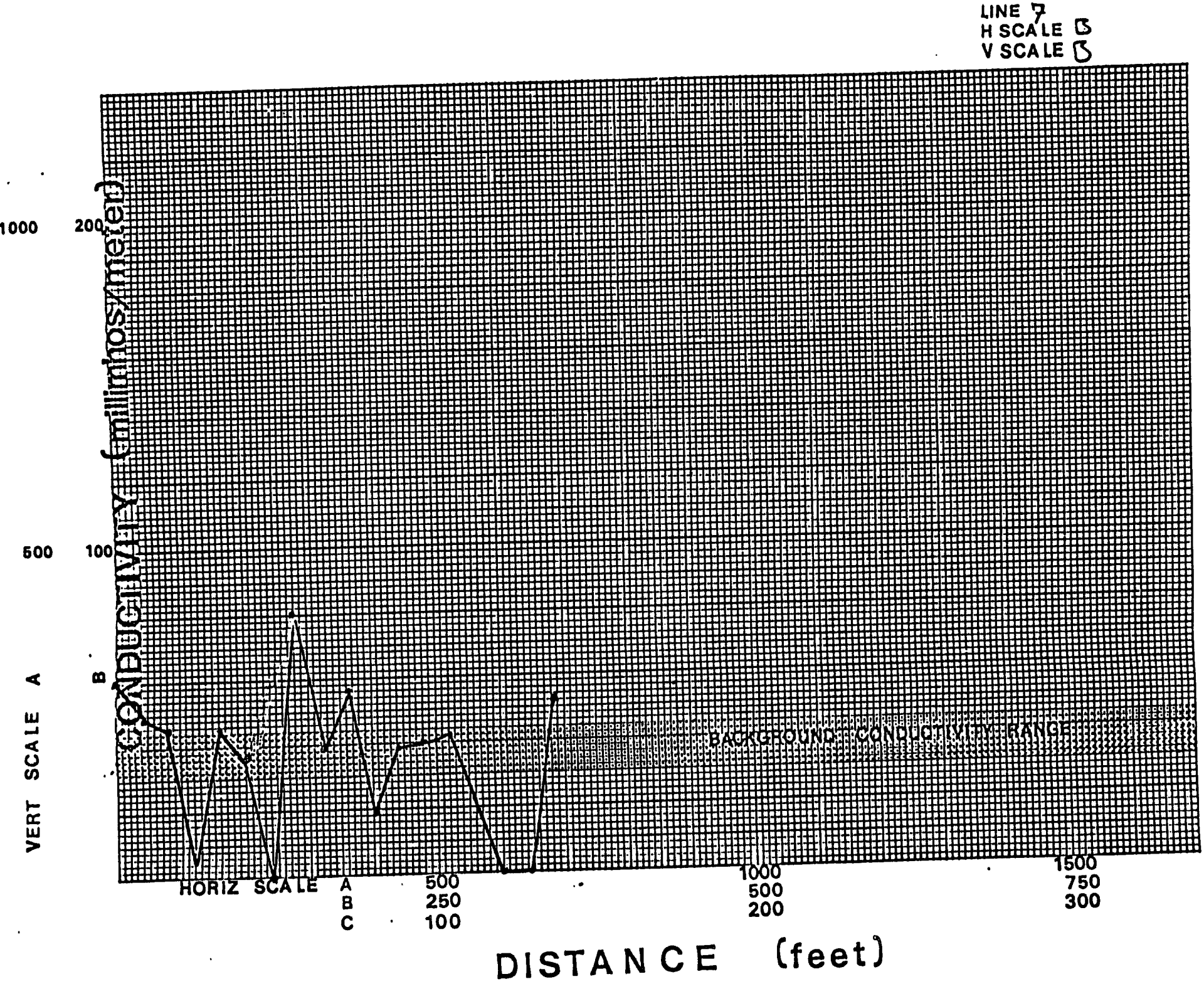

LINE 2
H SCALE C
V SCALE B
CONDUCTIVITY (millimhos/meter)
1000
200
500
100
B
VERT SCALE A
BACKGROUND CONDUCTIVITY RANGE
HORIZ SCALE A 500 1000 1500
B 250 500 750
C 100 200 300
DISTANCE (feet)


LINE 3
H SCALE C
V SCALE B
CONDUCTIVITY (millimhos/meter)
1000
200
500
100
B
VERT SCALE A
BACKGROUND CONDUCTIVITY RANGE
HORIZ SCALE
A 500 1000 1500
B 250 500 750
C 100 200 300
DISTANCE (feet)


LINE 4
H SCALE B
V SCALE B
woods
CONDUCTIVITY (millimhos/meter)
1000
200
500
100
B
VERT SCALE A
BACKGROUND CONDUCTIVITY RANGE
HORIZ SCALE A 500 1000 1500
B 250 500 750
C 100 200 300
DISTANCE (feet)


LINE 5
H SCALE B
V SCALE B
cornfield
CONDUCTIVITY (millimhos/meter)
000
200
500
100
B
VERT SCALE A
BACKGROUND CONDUCTIVITY RANGE
HORIZ SCALE A 500 1000 1500
B 250 500 750
C 100 200 300
DISTANCE (feet)


LINE 6
H SCALE B
V SCALE B
woods
CONDUCTIVITY (millimhos/meter)
1000
200
500
100
B
VERT SCALE A
BACKGROUND CONDUCTIVITY RANGE
HORIZ SCALE A 500 1000 1500
B 250 500 750
C 100 200 300
DISTANCE (feet)


LINE 7
H SCALE B
V SCALE B
CONDUCTIVITY (millimhos/meter)
1000
200
500
100
B
VERT SCALE A
BACKGROUND CONDUCTIVITY RANGE
HORIZ SCALE
A
B
C
500
250
100
1000
500
200
1500
750
300
DISTANCE (feet)

NIAGARA SANITATION NASH ROAD SITE (DEC # 932054)

Approx. Scale
1: 3600
(All distances estimated)

25 50 75
100yd 0 100yd 200yd

Ψ - Marsh Area
{ - Treeline
ǂǂ - Powerlines
L - Red-Brown Leachate stains

Slope - downward toward SE (<1%)

Mapped from field observation only by M. Hopkins NCHD

Michael E. Hopkins